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Phase One Evaluation of the South Miami-Dade Busway (On-Board Survey)

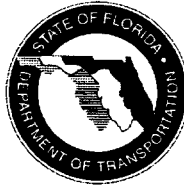
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16. Abstract One of the main goals of the Federal Transit Administration's (FTA) Bus Rapid Transit (BRT) Demonstration Program is to determine the effects of 10 nationwide BRT demonstration projects through a scientific evaluation process. The FTA has designated the South Miami-Dade Busway as one of its 10 BRT demonstration sites. The 10 BRT demonstration projects will serve as learning tools and as models for other locales throughout the country and possibly the world. In keeping with the FTA's evaluation guidelines, the Center for Urban Transportation Research (CUTR), working jointly with Miami-Dade Transit (MDT), conducted an on-board passenger survey of South Miami-Dade Busway customers in March 2001. The on-board survey was conducted to assess customer perceptions, behavior, and profiles. The survey asked customers to evaluate various elements of service as well as overall satisfaction, with the ultimate purpose of measuring the impact of the Busway on customer perceptions compared to standard local bus service after the introduction of the Busway. Specific questions focused on customer behavior, including trip origins and destinations and frequency of Busway use. Questions also obtained information on the ability to recognize the Busway corridor itself and perceptions of bus cleanliness. Finally, demographic questions provided a basis to assess changes in the demographic profile of Busway and local customers. Overall, the survey results clearly show that Busway customers are satisfied with the service offered by the Busway. In fact, customers who responded to the survey indicated that they are more satisfied with the service offered by the Busway compared to that offered by conventional MDT local bus service. This finding suggests that the Busway service offered by MDT has elevated the overall quality of the various public transit services offered by MDT from the customers' perspective.					
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EXECUTIVE SUMMARY

BACKGROUND

The South Miami-Dade Busway, commonly referred to as “Busway”, is one of 10 designated Federal Transit Administration (FTA) Bus Rapid Transit (BRT) demonstration sites. The Busway is an eight-mile two-lane bus-only roadway designed for exclusive use by transit buses and emergency and security vehicles for faster travel choices for Miami-Dade Transit (MDT) customers. MDT opened the first phase of the Busway in February 1997.

The FTA requires that demonstrations be evaluated to determine the most effective BRT features, such as type of service offered, level of transit demand, regional size, and other amenities. In March 2001, MDT contracted with the Center for Urban Transportation Research (CUTR) at the University of South Florida (USF) to survey Busway passengers to determine customer perceptions, behavior, and profiles. Specifically, the survey asked customers to evaluate service components as well as rate their satisfaction with the Busway and MDT. Several questions focused on customer behaviors, including trip origins and destinations and frequency of Busway use. Finally, demographic questions provided a basis to assess changes in the demographic profile of Busway and local customers. A more detailed evaluation is planned in the near future and will include an in-depth analyses of Busway components, such as ITS and on-time performance, etc.

RESULTS

CUTR conducted an on-board survey of Busway customers on March 20 - 21, 2001. A total of 1,164 surveys were completed, or 6.2% of the ridership population sampled. Survey results are organized into four sections:

1. Trip characteristics – provides details about customers’ individual trips.
2. Fare and travel behavior – examines customers’ overall transit usage characteristics.
3. Rider demographics – provides information about the customers making trips.
4. Customer satisfaction – reviews customer satisfaction with specific aspects of Busway services.

Trip Characteristics

Trip characteristics include routes used; modes of access and egress to/from Busway stops; a transfer analysis; and the customers’ initial original and final destinations. Survey findings included:

- Busway trips originate from home or work (60.1 percent and 21.7 percent, respectively).

- Customers walk to bus stop and final destination (63.8 percent and 55.7 percent, respectively).
- 40.1 percent use Busway to travel to work.
- 74.0 percent start or end trip on the Busway.
- Majority of customer trip origins and destinations are in South Dade (65.8 percent and 53.0 percent, respectively).
- Among customers that use Dadeland South Station for access to the Busway, 73.1 percent transferred from Metrorail.
- 51.1 percent of customers who egressed at the Dadeland South Station transferred to Metrorail.

Fare and Travel Behavior

Information was collected about Busway customers' frequency of use; type of fare used; previous mode choice; reasons for using Busway; and length of time using Busway. Survey findings included:

- 68.8 percent of customers use the Busway five to seven times per week (42.7 percent reported riding every day and 26.1 percent ride five or six days per week).
- Full cash fare of \$1.25 is paid by 56.3 percent of the Busway customers, while 14.1 percent use the full-fare Metropass.
- 5.8 percent use a Metrorail Transfer to board a Busway bus.
- 3.1 percent use a Golden Passport to board a Busway bus.
- 2.8 percent use a MDT Bus Transfer to board a Busway bus.
- Prior to the opening of the Busway, 21.6 percent drove; 20.2 percent rode with someone; 17.8 percent did not make the trip or did not live in the Miami-Dade area; and 17 percent used another MDT bus route to make the trip.
- The most frequent response cited by customers for using the Busway service is that they do not drive or do not have a valid driver's license (30.1 percent) followed by not having an available car for use (29.6 percent).
- 37.8 percent have used the service between six months and one year, and 36.1 percent have used the Busway since its inception in 1997.

Rider Demographics

Information about customer age, ethnicity, and income was used to construct a Busway customer profile.

The "typical" Busway customer is:

- Between 25 and 44 years of age.
- Black (non-Hispanic) or Hispanic.

- Earns less than \$25,000 in 2000.
- Rides between five and seven days per week.
- Does not drive or have an available car.
- Pays the full cash fare.

Customer Satisfaction

Customers rated Busway service characteristics as well as overall quality of the Busway and MDT services. Additionally, customers identified potential improvements to existing Busway services. Survey findings included:

- Busway customers are most satisfied with the level of safety on Busway vehicles (mean score = 3.81) and with the Busway fares (mean score = 3.76).
- Concerning the cost of riding the Busway, 24.4 percent rated the cost as “very good,” and 38.5 percent rated the cost as “good.”
- Service aspects resulting in lower overall customer satisfaction ratings included: hours of Busway operation (mean score = 3.50); frequency of the Busway service (mean score = 3.25); and dependability, or on-time performance, of the Busway buses (mean score = 3.18).
- 36.1 percent indicated that the most important improvement, if funding were available, would be to increase the frequency of the service. An equal percentage said that they would extend Busway hours-of-service and the Busway corridor length (12 percent).

CONCLUSIONS

Significant survey findings show that almost one-half of the Busway customers were not previous transit users. Most customers made the trip by driving alone or carpooling, or using a jitney or a taxi. These findings suggest that the available Busway services have contributed to increased transit usage in the region. Almost one-third of the customers have used Busway services since its’ inception. However, more than one-fourth are new users (less than 6 months, including first day riders) suggesting that the Busway continues to attract new customers. Results also suggest that the Busway attracts customers with slightly higher incomes compared to traditional MDT users.

Overall, the results from the on-board survey clearly show that Busway customers are satisfied with the service offered by the Busway. In fact, customers who responded to the survey indicated that they are more satisfied with the Busway service compared to that offered by conventional MDT local bus service. Customers are also more satisfied with the increased service speeds offered by the Busway. As for Busway service characteristics, customers are most satisfied with the level of safety and the cost to use the service. If funding were available, one-third of the customers would increase the frequency of the service.

SOUTH MIAMI-DADE BUSWAY ON-BOARD SURVEY

INTRODUCTION

One of the main goals of the Federal Transit Administration's (FTA) Bus Rapid Transit (BRT) Demonstration Program is to determine the effects of 10 nationwide BRT demonstration projects through a scientific evaluation process. The FTA designated the South Miami-Dade Busway as one of its 10 BRT demonstration sites. According to the FTA, careful documentation and analyses of the BRT demonstration projects and the unique features of these projects, will help determine the most effective features, i.e., type of service offered, level of transit demand, region size, and other amenities. It is anticipated that the 10 BRT demonstration projects will serve as learning tools and as models for other locales throughout the country and possibly the world. In order for these demonstrations to have maximum effectiveness in their respective operational capacities, a consistent and carefully structured approach to project evaluation is necessary.

The following, taken verbatim from FTA's Internet site, are evaluation guidelines for the 10 BRT demonstration projects:

1. Determine the benefits, costs, and other impacts of individual BRT features, including ITS/APTS applications, and of the system as a whole.
2. Characterize successful and unsuccessful aspects of the demonstration.
3. Evaluate the demonstration's achievement of FTA and agency goals.
4. Assess the applicability of the demonstration results to other sites.

In addition, the FTA plans to examine specific impacts of the BRT demonstration projects. These impacts include the: degree that bus speeds and schedule adherence improve; degree that ridership increases (due to improved bus speeds, schedule adherence, and convenience); effect of BRT on other traffic; effect of each of the BRT components on bus speed and other traffic; benefits of ITS/APTS applications to the demonstration project; and effect of BRT on land use and development. To meet these objectives, it is necessary to collect a variety of data on several aspects of the BRT demonstration project, including measurable impacts to BRT passengers via the on-board survey process.

In keeping with the FTA's evaluation guidelines, the Center for Urban Transportation Research (CUTR), working jointly with Miami-Dade Transit (MDT), conducted an on-board survey of South Miami-Dade Busway customers in March 2001. The South Miami-Dade Busway is an example of a BRT system specifically designed to offer faster travel choices to bus riders. Evaluation of the various components of the Busway is a crucial part of the demonstration project. The survey serves as the first phase of the independent review of the Busway. The second phase will include analyses of the more detailed components of the Busway, including ITS and on-time performance, for example.

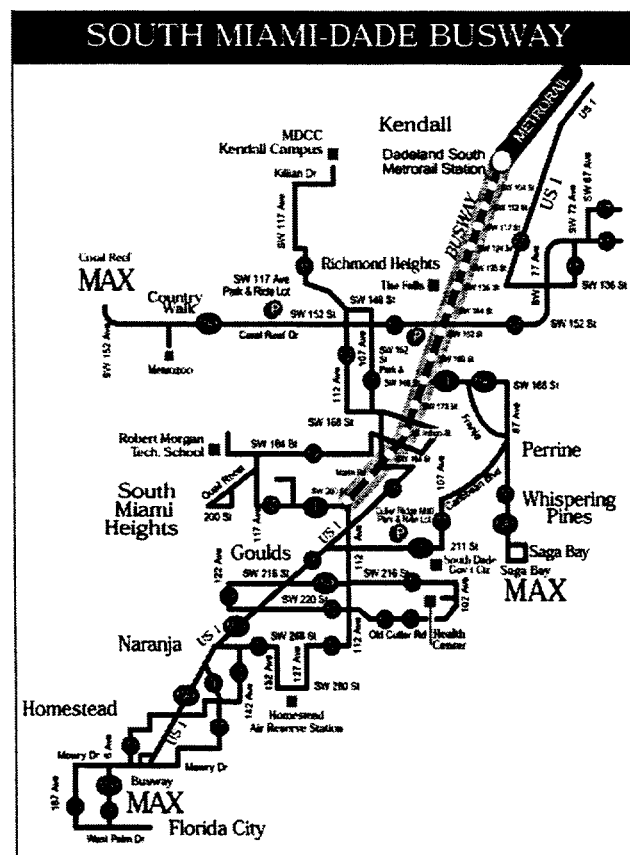
The on-board survey was conducted to assess customer perceptions, behavior, and profiles. The survey instrument asked customers to evaluate various elements of service as well as overall satisfaction, with the ultimate purpose of measuring the impact of the Busway on customer perceptions compared to standard local bus service after the introduction of the Busway. Specific questions focused on customer behavior, including trip origins and destinations and frequency of Busway use. Questions also obtained information on the ability to recognize the Busway corridor itself and perceptions of bus cleanliness. Finally, demographic questions provided a basis to assess changes in the demographic profile of Busway and local customers.

About the South Miami-Dade Busway

The South Miami-Dade Busway, or Busway for short, is an eight-mile two-lane bus-only roadway constructed in a former rail right-of-way (the former Florida East Coast Railroad corridor) adjacent to US 1, a major north-south arterial in southern Miami-Dade County. MDT opened the first phase of the Busway on February 3, 1997. The Busway was designed for exclusive use by transit buses and emergency and security vehicles. The purpose of the Busway service is to address the need for faster travel choices for MDT customers.

Currently, there are 18 intersections and 15 on-line stations in each direction. The Busway corridor over much of its length is within 100 feet of the west side of US 1, one of the most heavily traveled corridors in Miami-Dade County. There are several types of service in the Busway corridor:

- *Local* – only operates on the exclusive Busway and makes every stop at all times (referred to as the Busway Local).
- *Limited Stop* – operates along the length of the Busway and beyond, skips stops nearest the Metrorail station during peak periods (Busway MAX or Metro Area Express).
- *Feeder* – Collects passengers in neighborhoods and then enters the Busway at a middle point (service is known as either the Coral Reef MAX or Saga Bay MAX).
- *Crosstown* – These were pre-existing routes in the corridor that now take advantage of the Busway when possible. These routes enter and exit the Busway at middle points. These



routes are designed to provide access to many destinations in the region, not just to the center city (Routes 1, 52, and 65).

- *Intersecting* – Routes in the corridor that intersect with Busway routes, sometimes stopping at Busway stations.

The Busway stations are located at roughly half-mile intervals, more than twice the customary stop spacing for conventional MDT local bus service. For example, when Route 1 operated on US 1, it had 19 designated stops southbound and 23 northbound (on the portion of the route using US 1). When it was moved to the Busway, only 10 Busway stations served the same distance. Most stations are on the far side of intersections. In two locations there are mid-block stops to serve major generators. All stations have large shelters designed to protect customers from the weather.

According to MDT, bus ridership on the U.S. 1 corridor in South Miami-Dade County increased greatly with the implementation of the Busway service. From February 1997 to March 2002, average daily boardings on Busway routes have increased approximately 130 percent.

With funding assistance from the FTA, an 11.5-mile extension south is planned. This extension will be a continuation of the existing Busway to Homestead and Florida City. The extension will be divided into three segments: Northern Segment (5 miles), Central Segment (3.75 miles), and Southern Segment (2.73 miles).

SURVEY METHODOLOGY AND PROCEDURES

The Busway survey instrument was printed in English on one side and Spanish on the other. It contained 18 questions and provided space for additional written comments by customers. CUTR and MDT staff developed the survey instrument jointly. The on-board surveying of customers was conducted on March 20 and 21, 2001. On March 27, 2001, CUTR staff re-surveyed selected bus trips that were under-sampled on the original survey days.

The on-board survey specifically targeted customers riding only those routes that operate along the Busway for either all or a portion of their trips. At least half of all trips on a particular bus route were selected for surveying. For example, if there were eight trips on a route, four were to be surveyed. If there were nine trips, five were surveyed. The trips selected for survey distribution spanned the service hours, i.e., morning peak, mid-day off-peak, afternoon peak, and evening.

Surveyors were instructed to offer a survey form to each customer upon boarding a bus, even if the customer had completed a survey previously, either on another day and/or route. It is important to note that a major purpose was to survey the trip, not just the individual making the trip. Surveyors were instructed to do the best they could to encourage participation in the survey.

Survey data were entered into an Excel spreadsheet for analyses. CUTR staff performed the review and data analyses using SPSS (Statistical Product and Service Solutions) software. It should be noted that CUTR researchers re-classified survey responses to comply with the survey format in cases in which the respondent did not fully consider the available response choices.

Prior to the analyses, survey responses were weighted based on the total weekday ridership and completed surveys for each route to more accurately reflect respondent characteristics to Busway ridership as a whole. Weighting factors were derived on a route-by-route basis to ensure proper representation of each route's respective riders. Specifically, a weight for a particular route was calculated by dividing the total weekday ridership (obtained from MDT staff) for the route during the survey period by the number of surveys returned on that route. The resulting weight factor was applied to each completed survey's data on that route for statistical analysis. The reader should keep in mind that the survey methodology involved the survey of willing customers as often as possible. This methodology corresponds most closely with ridership data that are reported as "unlinked trips." Table 1 indicates the ridership figures for March 19-23, 2001, provided by MDT staff and subsequently used for the weighting. The data in Table 1 are representative of the five-day (Monday through Friday) total weekday ridership for each route; however, daily ridership figures were not available. The on-board survey was conducted during two of these five days.

TABLE 1: Total Weekday Ridership—March 19-23, 2001

Entire Route	Total Weekday Ridership*	Percent of Total Ridership
1	8,182	17.4
31/231 (Busway Local)	8,820	18.8
38 (Busway MAX)	17,368	37.0
52	6,619	14.1
252 (Coral Reef MAX)	4,491	9.6
287 (Saga Bay MAX)	1,491	3.2
Total Busway Routes Ridership	46,971	100

* total weekday ridership for the entire route length

Response Rates by Route

Survey forms were coded with a unique serial number and assigned for distribution on board specific runs. This facilitated the calculation of response rates for individual routes and was used to help weight the response data. Table 2 indicates the proportion of completed surveys for each route to the 1,164 total completed valid Busway surveys.

TABLE 2: Response By Route

Route	Total Survey Responses	Average Number of Passengers on Route During Survey Period	Survey Responses/Average Number of Passengers on Route (%)
1	211	3,273	6.45
31/231 (Busway Local)	196	3,528	5.56
38 (Busway MAX)	238	6,947	3.43
52	256	2,648	9.67
252 (Coral Reef MAX)	201	1,796	11.19
287 (Saga Bay MAX)	62	596	10.42
Total Responses	1,164	18,788	6.20

Organization of Survey Analysis

The on-board survey analyses are presented in four sections: Trip Characteristics; Fare and Travel Behavior; Rider Demographics; and Customer Satisfaction. Each section provides information about the survey results that will be useful to MDT as it evaluates and prioritizes enhancements to the Busway services.

The Trip Characteristics section details specific attributes of the customers' individual trips. Trip characteristics gathered from the customers include routes used, modes of access and egress to/from Busway stops, a transfer analysis, and the customers' initial original and final destinations. The Fare and Travel Behavior section examines the customers' overall transit usage characteristics. The type of fare paid, how frequently the customers ride each week, and how long they have been using the Busway are discussed in this section. Customer reasons for using transit and their potential alternative modes of transportation are explored as well. In conjunction with the individual trip information, these data can contribute to effective scheduling, planning, and general policy decisions regarding overall service on the Busway.

The Rider Demographics section changes the focus from the trips that are being made to the customers making them. Information presented about customers includes age, ethnicity, and total household income in 2000. Also, utilizing both demographics and travel behavior

information, a ridership profile for a typical Busway customer is constructed and discussed. The rider characteristics and resulting profile are an important part of an on-board survey analysis. Specifically, the compilation of these data will enable MDT to better identify and understand the current market characteristics of its ridership and target specific rider characteristics/segments that can help direct more focused marketing strategies. Also, this information can assist in determining the need for customer amenities.

The final section reviews customer satisfaction with specific Busway service attributes including open-ended questions regarding Busway improvements. Primarily, this section analyzes the responses to Question 17, which asked customers to rate their perception of 11 different service characteristics and two questions on the overall quality of Busway service and MDT service. A five-point scale (1 to 5) was provided to customers to rate their perception. On this scale, a score of “5” indicates a “very good” rating, while a score of “1” indicates a “very poor” rating. Another survey question (Question 18) asked customers to identify the single most important improvement to Busway service, given funding availability. MDT can address the identified areas for improvement through changes to the Busway. By distinguishing rider sensitivities regarding specific service characteristics, MDT can better prioritize Busway improvements.

Survey Completion

The survey instrument contained a total of 18 questions, some with multiple components. A copy of the survey instrument is included in Appendix A. The majority of questions were closed-ended in nature, simply requiring customers to select from a list of responses provided. Because answering every question on the survey was not a requirement for the survey to be included in this analysis, many of the records in the final survey database had missing values for various questions. To help understand the respondent sample sizes for each of the questions analyzed herein, Table 3 has been provided on the following page. The response rates for all questions have been calculated based on a total of 1,164 completed surveys.

TABLE 3: Response Rate By Survey Question

Question	Valid Responses	Response Rate	Question	Valid Responses	Response Rate
1	1,135	97.5%	17a	1,004	86.3%
2	847	72.8%	17b	963	82.7%
3	1001	86.0%	17c	934	80.2%
4	1,119	96.1%	17d	926	79.6%
5	876	75.3%	17e	926	79.6%
6	1,112	95.5%	17f	926	79.6%
7	1,110	95.4%	17g	930	79.9%
8	752	64.6%	17h	930	79.9%
9	1,094	94.0%	17i	934	80.2%
10	1,100	94.5%	17j	913	78.4%
11	1,049	90.1%	17k	914	78.5%
12	1,087	93.4%	17l	926	79.6%
13	1,079	92.7%	17m	899	77.2%
14	1,088	93.5%	18	644	55.3%
15	1,082	93.0%	Comments	469	40.3%
16	902	77.5%			

Based on the individual question response rates shown in Table 3 and a review of a random sample of completed surveys, it appears that an overwhelming majority of customers understood and responded properly to each of the survey questions. Because survey questions concerning sensitive items such as income generally do not elicit high response rates, it is surprising that Question 16, which inquires about the customer's total household income for 2000, had a relatively high response rate (77.5 percent). The lowest response rates were exhibited by the open-ended questions, for which respondents had to do more than just place a check (✓) by a response choice. There was a 55.3 percent response rate for Question 18 regarding improvements and a 40.3 percent response rate for comments and suggestions. Improvements suggested by respondents are categorized by type and presented graphically in Figure 25 (see page 33).

TRIP CHARACTERISTICS

The purpose of Questions 1, 4, 6, and 7 was to allow customers to describe the nature of their trip in terms of place of origin, mode of access, mode of egress, and final destination. From Figures 1 through 4, which highlight the frequency distributions for the four questions, it is clear that most Busway customers:

- Begin trips from either home or work
- Walk to bus stops
- Ride the Busway to work or home
- Walk to final destinations

FIGURE 1: Question 1 - Where did you come from before you got on the bus for this trip?

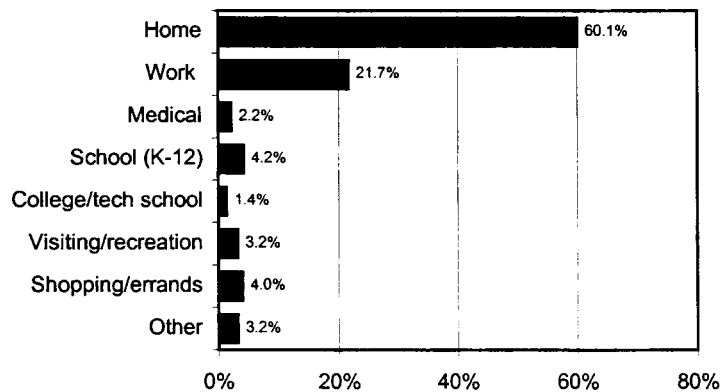


FIGURE 2: Question 4 - How did you get to the bus stop for this particular bus trip?

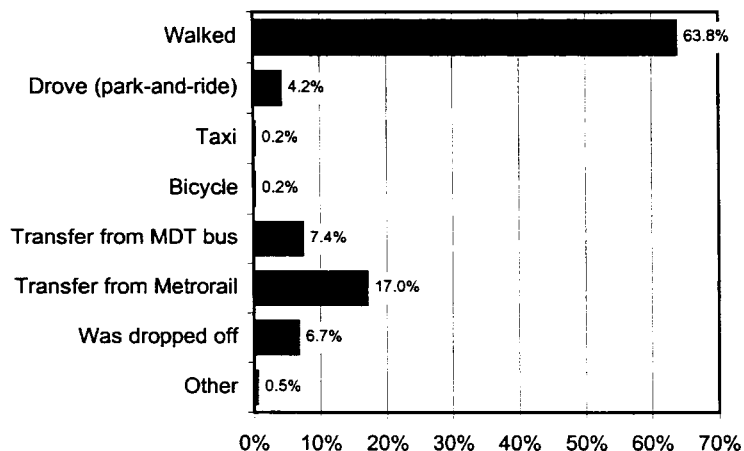


FIGURE 3: Question 6 - How will you get to your final destination?

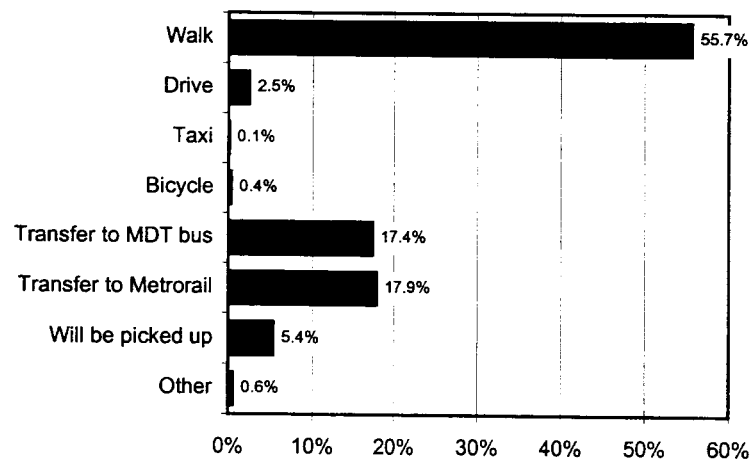
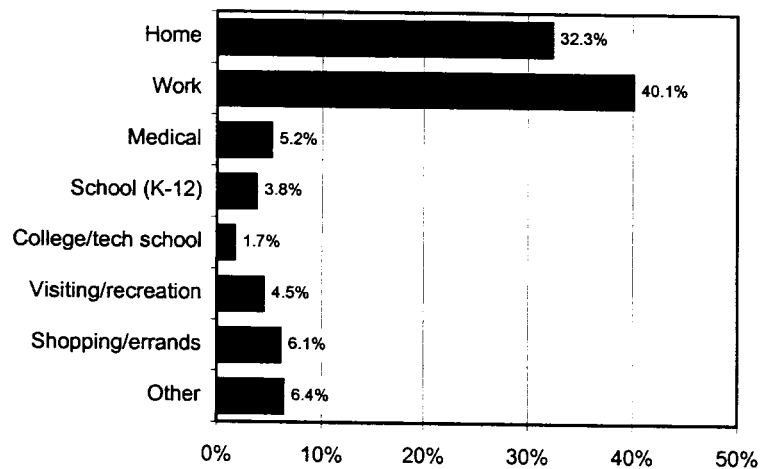


FIGURE 4: Question 7 - Where are you going on THIS trip?



Percent of Route Ridership with Portion of Trip on Busway

A cross-tabulation was performed to determine how many customers started and ended their trip on the Busway or off the Busway. Just fewer than 24 percent of customers started and finished their trip on the Busway and just fewer than 32 percent of customers started their trip off of the Busway and finished their trip on the Busway. Further, nearly 19 percent of customers started their trip on the Busway and ended their trip off the Busway. In total, more than 74 percent of the responding customers either started or ended their trip on the Busway. Finally, almost 26 percent of customers started and finished their trip off of the Busway. Tables 4, 5, and 6 show the detailed results for this cross-tabulation.

TABLE 4: Percent of Route Ridership with Portion of Trip on Busway

Trip Started	Trip Ended	
	On Busway	Off Busway
On Busway	23.7%	18.7%
Off Busway	31.7%	25.8%

In Table 5, presented on the following page, the origin station is listed in the left-hand column of the table while the destination station is shown along the top row. “Metrorail” is included as a station because some respondents wrote “Metrorail” as their destination station instead of “Dadeland South.” It should be noted that the Dadeland South Station is the southern terminus of Metrorail and the northern terminus of the Busway (as such, the responses that indicated an origin station of Dadeland South and a destination station of Metrorail should be ignored). The results show that the majority of Busway customers ride the entire length of the corridor. For example, the largest share of riders travel from Cutler Ridge to Dadeland South/Metrorail and, likewise, from Dadeland South/Metrorail to Cutler Ridge.

TABLE 5: Breakdown by Station of Customers Using Busway (percentages)

STATION	Destination Station																TOTAL
	Dadeland South	104 th	112 th	117 th	124 th	128 th	136 th	144 th	152 nd	160 th	168 th	173 rd	184 th	Marlin	200 th	Cutler Ridge	
Dadeland South	*	--	1.4	--	--	0.3	0.3	1.8	10.1	0.7	2.0	0.5	2.6	2.0	3.9	7.9	27.1
104 th	0.5	*	--	--	--	--	--	--	0.7	--	--	--	--	--	--	--	1.3
112 th	0.9	--	*	--	--	--	--	--	--	--	--	--	--	--	--	--	0.9
117 th	--	--	--	*	--	--	--	--	--	--	--	--	--	--	--	--	--
124 th	0.7	--	--	--	*	--	--	--	--	--	--	--	0.6	--	--	--	1.3
128 th	2.2	--	--	--	--	*	--	--	--	--	--	--	--	--	--	--	2.2
136 th	2.8	0.6	--	--	--	--	*	--	0.6	0.7	--	--	--	--	--	0.6	5.6
144 th	2.0	--	--	--	--	--	--	*	--	0.6	--	--	--	--	--	--	2.6
152 nd	8.9	--	--	--	--	--	--	--	*	--	--	--	0.3	--	--	--	9.2
160 th	2.1	--	--	--	--	--	--	--	--	*	--	--	--	--	--	--	2.1
168 th	2.8	--	--	--	--	--	--	--	--	--	*	--	--	--	--	--	3.4
173 rd	0.6	--	--	--	--	--	--	--	--	--	--	*	--	--	--	--	0.6
184 th	3.3	--	--	--	--	--	--	--	--	0.5	--	--	*	--	0.7	--	4.6
Marlin	1.8	--	--	--	--	--	--	--	--	--	--	--	--	*	--	--	1.8
200 th	5.5	--	--	0.6	1.0	--	0.6	--	0.3	1.0	--	--	--	--	*	--	9.0
Cutler Ridge	16.0	--	--	--	0.6	--	--	--	0.9	--	1.0	--	--	--	1.0	*	21.4
TOTAL	20.0	0.6	1.4	0.6	1.6	0.3	2.9	1.8	12.6	4.1	3.3	0.5	3.5	2.0	5.6	8.5	100.0

NOTE: Origin station is shown in the left-hand column; destination station is shown in the top row.

Origin and Destination by Transit Zone

MDT's service area can be divided into six Transit Analysis Zones. The six zones were identified in the *MDT 2000 Tracking Study* (Behavioral Science Research, June 2001), and are used to examine the travel patterns of Busway customers. Questions 2 and 8 on the survey instrument asked respondents to indicate where they started their trip and the location of their final destination, respectively. The intent of these questions was to determine the start and end locations of the entire trip, not just the transit portion. The respondents, who often report only the transit stop or station where they accessed or egressed the system, often misunderstand these questions. In several cases, respondents were not specific enough, thus location could not be determined. However, CUTR researchers analyzed the usable responses to these questions and grouped the trip origins and destinations by zone, as shown in Table 6. The responses shown in Table 6 are still likely skewed to Zone 6 (South Dade), where the Busway operates. The most reliable way to collect this data would be through an interview process rather than a survey.

TABLE 6: Busway Trip Origins and Destinations by Transit Zone

	Zone 1 (NW Dade)	Zone 2 (NE Dade)	Zone 3 (Beaches)	Zone 4 (Central)	Zone 5 (W Central)	Zone 6 (S Dade)
Trip Origin	1.6%	1.8%	0.5%	7.9%	22.4%	65.8%
Trip Destination	2.8%	5.1%	0.7%	17.0%	21.4%	53.0%

Transfer Analysis: To/From Metrorail To/From Busway's Dadeland South Station

A breakdown of Metrorail and other modes of access/egress is given in Table 7. Among customers using the Dadeland South Station for access to the Busway, 73.1 percent transferred from Metrorail. In addition, 51.1 percent who egressed at the Dadeland South Station transferred to Metrorail. It should be noted that, in Table 7, it is unlikely that zero riders are picked up from Dadeland Station; however, these are the results of this sample. It is also possible that, as with other similar questions, some riders misunderstood the response choices. Tables 8 and 9, show Busway access and egress by route.

TABLE 7: Access and Egress Patterns Through Dadeland South Station

	Walked	Drove	Bicycle	Transfer to/from MDT Bus Route	Metrorail	Dropped Off or Picked Up	Other
Access	12.2%	2.7%	0.4%	7.7%	73.1%	3.9%	0.0%
Egress	30.0%	1.6%	0.0%	16.8%	51.1%	0.0%	0.5%

TABLE 8: Analysis of Access to Busway by Busway Station and Route

Busway Access

Station	Route						TOTAL
	1	31/231	38	52	252	287	
Dadeland South	11.7%	9.0%	8.7%	2.5%	6.3%	0.7%	38.9%
104th	—	0.3%	—	—	—	0.4%	0.7%
112th	0.3%	0.3%	—	0.2%	—	—	0.8%
117th	0.6%	0.3%	—	—	—	—	0.9%
124th	0.3%	0.6%	0.6%	—	—	—	1.5%
128th	0.3%	0.6%	—	—	0.9%	—	1.8%
136th	1.9%	2.9%	—	0.6%	0.5%	—	5.9%
144th	1.2%	0.6%	—	0.6%	—	—	2.4%
152nd	0.9%	4.4%	2.9%	—	—	0.2%	8.4%
160th	0.9%	2.2%	2.4%	—	—	—	5.5%
168th	0.6%	0.4%	1.8%	0.2%	—	0.2%	3.2%
173rd	—	0.4%	0.6%	—	—	—	1.0%
Indigo	—	—	—	0.2%	—	—	0.2%
184th	—	2.0%	2.4%	0.2%	—	0.2%	4.8%
Marlin	—	—	1.7%	—	—	—	1.7%
200th	1.6%	1.9%	1.7%	0.4%	—	0.2%	5.8%
Cutler Ridge	2.2%	3.1%	7.5%	1.7%	—	2.0%	16.6%
TOTAL	22.5%	29.0%	30.3%	6.6%	7.7%	3.9%	100.0%

TABLE 9: Analysis of Egress from Busway by Busway Station and Route***Busway Egress***

Station	Route						TOTAL
	1	31/231	38	52	252	287	
Dadeland South	5.0%	12.5%	13.0%	3.2%	4.9%	0.5%	39.1%
104th	0.2%	0.3%	0.5%	--	0.3%	0.5%	1.8%
112th	--	0.3%	1.5%	0.4%	--	--	2.2%
117th	--	--	--	0.2%	--	--	0.2%
124th	--	1.0%	--	--	--	--	1.0%
128th	0.3%	1.0%	--	--	--	--	1.3%
136th	0.5%	1.8%	1.0%	0.4%	0.2%	0.2%	4.1%
144th	0.8%	0.5%	--	0.2%	0.8%	0.2%	2.5%
152nd	3.7%	1.6%	--	--	--	0.3%	5.6%
160th	0.5%	0.5%	0.5%	0.4%	--	--	1.9%
168th	1.0%	1.0%	--	0.2%	--	--	2.2%
173rd	--	1.0%	--	--	--	--	1.0%
Indigo	--	--	0.5%	--	--	--	0.5%
184th	--	2.1%	1.0%	--	--	--	3.1%
Marlin	--	9.2%	0.5%	--	--	--	9.7%
200th	1.0%	3.1%	2.0%	1.6%	--	--	7.7%
Cutler Ridge	3.0%	8.7%	4.0%	0.4%	--	--	16.1%
TOTAL	16.0%	44.6%	24.5%	7.0%	6.2%	1.7%	100.0%

Transfer Analysis: To/From Another MDT Metrobus Route

For both Questions 4 and 6, the option of transferring to or from another MDT standard local bus route or Metrorail was among the response choices. If the respondent selected this response in either question, he or she was asked to write which MDT route they transferred from or to. The responses to Question 4 indicated that 7.3 percent of Busway customers accessed the Busway by transferring from a MDT Metrobus route and 17.0 percent accessed the Busway via Metrorail. The responses to Question 6 indicated that 17.4 percent of Busway customers transferred to an MDT Metrobus route and 17.9 percent transferred to Metrorail. Table 10 lists the percentages of customers transferring to or from each route connecting with the Busway.

TABLE 10: Busway Transfers to/from Another MDT Route*

Route	From	To	Route	From	To
1	11.1%	11.9%	70	15.2%	21.2%
24	0.0%	3.7%	73	12.0%	5.8%
35	18.1%	10.4%	87	7.3%	5.6%
40	0.0%	2.7%	88	1.8%	20.2%
52	23.6%	10.3%	104	1.8%	6.2%
56	2.0%	1.0%	137	3.3%	1.0%
57	3.7%	0.0%			

**Special Note: Transfers to/from the Busway are not linked in this survey. In only one case did a respondent both transfer to and transfer from the Busway. It is important to note that there were 82 (7.3 percent) of 1,164 respondents accessing the Busway by transferring from an MDT route and the percentages above for the routes from which riders are accessing the Busway represent slightly more than seven percent of all respondents. For example, of the respondents transferring from another MDT route to the Busway, 13.8 percent transferred from Route 35, as shown in Table 10. In addition, the egress by route percentages represent the approximately 18 percent of respondents who transferred from the Busway to another MDT route. For example, of the 18 percent who transferred to another MDT route, 5.6 percent transferred to Route 35, as shown in Table 10. Finally, crosstabulations were computed for those respondents who were both transferring from an MDT route to access the Busway and transferring back to an MDT route to egress the Busway. It was found that only 3 out of 282 respondents did this, or 1 percent of all riders who made a transfer and only 0.3 percent of all respondents.*

The combined transfer rate to the Busway is 24.3 percent for transfers from other MDT bus routes and Metrorail. The combined transfer rate from the Busway is 35.3 percent for transfers to MDT bus routes and Metrorail. While this might seem to be a relatively high transfer rate, it is important to remember that the Busway is considered to be an extension of Metrorail service. Similar to rail transit, the Busway functions as an attractive, high-capacity trunk line offering

higher quality service; thus, transfers to and from trunk services are inevitable and typical. However, it is useful to continually monitor Busway transfer ridership.

Park-and-Ride Access by Busway Station

Only 4.2 percent of the survey respondents indicated that they accessed the Busway by driving (via park-and-ride). Of these riders, more than one-fourth used the 152nd Street Station (Coral Reef Drive), as shown in Table 11. However, nearly one-half used Cutler Ridge Mall. An origin analysis was attempted for the stations at Cutler Ridge, 152nd Street, and Dadeland South to assess the origin of park-and-ride patrons. However, a very large percentage (82 percent) either provided the station name for Question 2 (which was to be the *trip* origin—the station name should have been indicated only in Question 3) or provided no answer at all. This indicates that the customers had difficulty in understanding what was being asked for Question 2. The remaining answers were “Homestead.” Of course, it must be kept in mind that these customers represent only 4.2 percent of all Busway ridership.

TABLE 11: Park-and-Ride Access by Busway Station

Dadeland South	104th	112th	117th	124th	128th	136th	144th	152nd
10.6%	0.0%	0.0%	0.0%	0.0%	0.0%	2.9%	0.0%	27.4%
160th	168th	173rd	Indigo	184th	Marlin	200th	Cutler Ridge Mall	
5.0%	0.0%	0.0%	0.0%	2.9%	2.9%	2.9%	45.2%	

FARE AND TRAVEL BEHAVIOR

A series of questions were included on the survey instrument to establish the Busway customers' fare payment and travel behavior characteristics. These questions included:

- Frequency of use (Question 9)
- Type of fare paid (Question 10)
- How the trip was made prior to the existence of the Busway (Question 11)
- Reason for using the Busway (Question 12)
- Length of use (Question 13)

Frequency Of Use

Question 9 asked customers how many days per week they utilized a route that operates on the Busway. As shown in Figure 5, on the following page, 68.8 percent of customers use the Busway five to seven times per week (42.7 percent reported riding every day; 26.1 percent reported riding five or six days per week). This result is consistent with the trip origin and destination information presented previously (see Figures 1 and 4), which indicated that a majority of Busway customers travel between home and work.

Fare Payment Type

The results of Question 10 indicate that most customers pay full fare, even if they are frequent riders. The full cash fare of \$1.25 is paid by 56.3 percent of the Busway customers who completed the survey, while 14.1 percent use the full-fare Metropass. Figure 6, shown on the following page, summarizes the payment breakdown by type of fare. According to Figure 6, 5.8 percent of those surveyed used a Metrorail Transfer to board a Busway bus. This finding should be distinguished from that presented previously in Figure 2, which showed that 17 percent of those boarding a Busway bus had just transferred from Metrorail. The difference between these two results is evidenced by those using a Metropass or Golden Passport to ride the Metrorail and Busway.

A cross-tabulation of data based on responses to frequency of use, income, and fare payment revealed that 49.9 percent of customers with annual household incomes of less than \$25,000 use the Busway five or more times per week and pay the full cash fare. This is a common observation throughout the transit industry, because many low-income customers cannot afford the monthly pass, even though it would mean a lower cost (fare) per trip. It is likely that such observations will continue until more advanced fare payment technologies such as SmartCard become widely available.

FIGURE 5: Question 9 - How often do you use a Busway route?

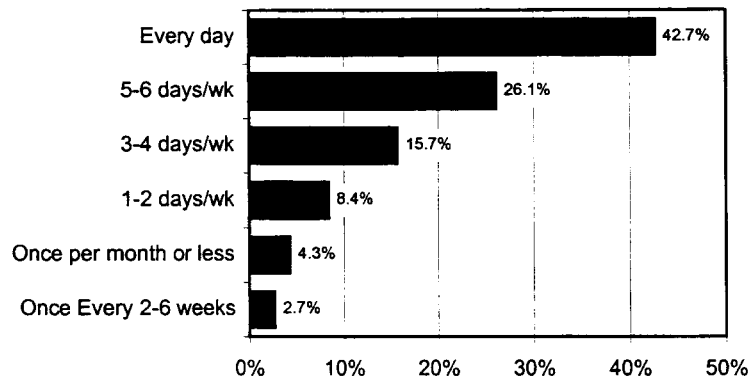
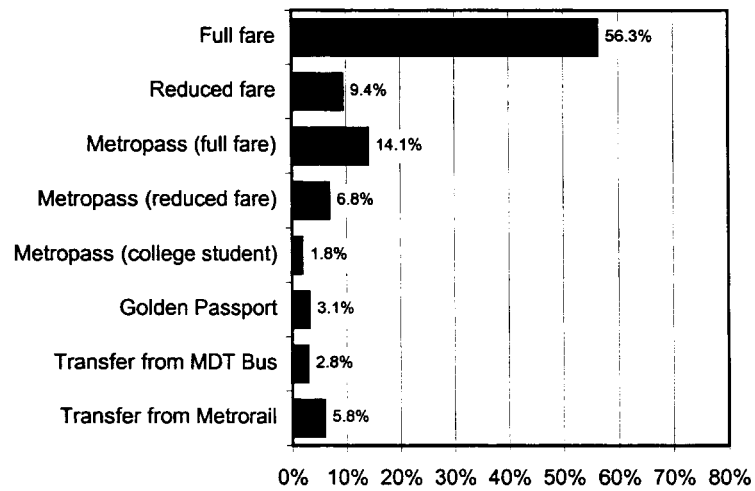


FIGURE 6: Question 10 - What fare did you pay in order to get on this particular bus?



Other Transportation Options

Question 11 asked customers the following question: "Before the Busway opened, how did you make this trip?" Figure 7 graphically summarizes the answers to this question. The largest percentage, 21.6 percent, drove, while 20.2 percent rode with someone. In total, 41.8 percent of survey respondents made their trips by automobile prior to the existence of the Busway. This finding is significant because it indicates that new riders are attracted by the services offered by the Busway. Moreover, 17.8 percent did not make the trip before the Busway opened or did not live in the Miami-Dade area. Seventeen percent used another MDT bus route before the Busway opened. Table 12, on the following page, provides a breakdown of the routes that customers indicated that they used prior to the existence of the Busway. Of the 95 valid responses to this part of Question 11, 51 (or 52.6 percent) indicated that they previously rode Route 52, and 29 respondents (or 29.9 percent) indicated riding Route 1 prior to the availability of Busway service. These findings are significant as they show that 67.5 percent of Busway riders are new MDT users because they either used an alternative mode to MDT, such as auto, taxi, or jitney, or did not make the trip at all. This finding also suggests that many of the "new" Busway customers may not be former transit users and that the service offered by the Busway was a major reason to start using public transit.

FIGURE 7: Question 11 - Before the Busway Opened, How Did You Make This Trip?

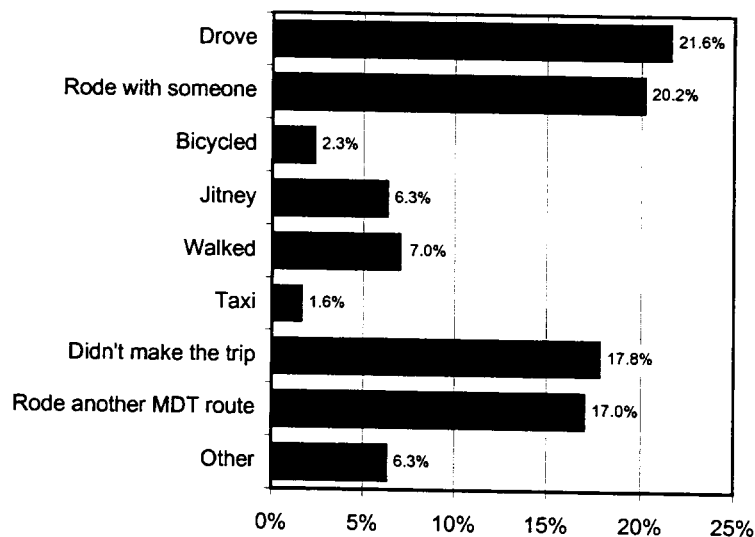


TABLE 12: MDT Routes Used Prior to Busway

MDT Route	Number of Responses	% of Total Responses
1	29	29.9%
35	6	6.2%
38	6	6.2%
52	51	52.6%
65	1	1.0%
70	2	2.1%
73	1	1.0%
88	1	1.0%
TOTAL	97	100.0%

Reason for Riding

Question 12 asked Busway customers the following: “What is the *most important* reason why you currently use a Busway route?” Survey respondents were asked to check only one response. Based on the results shown on the following page in Figure 8, the most frequent response (30.1 percent) given by customers is that they do not drive or do not have a valid driver’s license. The second most frequent response (29.6 percent) is that a car is not available for use. This means that more than half of all respondents either do not drive or do not have access to a car. In addition, 14.3 percent of respondents indicated “Busway is more convenient” as a major reason for using the Busway.

Length of Use

Question 13 on the survey instrument queried respondents about how long they have been using the Busway. The responses, exhibited in Figure 9, on the following page, indicate that 37.8 percent have been using the service between six months and one year, and 36.1 percent—more than one-third—have been using the Busway since it opened in 1997. The responses also show that 26.1 percent—nearly one-fourth—have been using the Busway for less than six months (including first-day riders). This result shows that the Busway is continuing to attract new customers to the service.

FIGURE 8: Question 12 - What is the most important reason why you currently use the Busway?

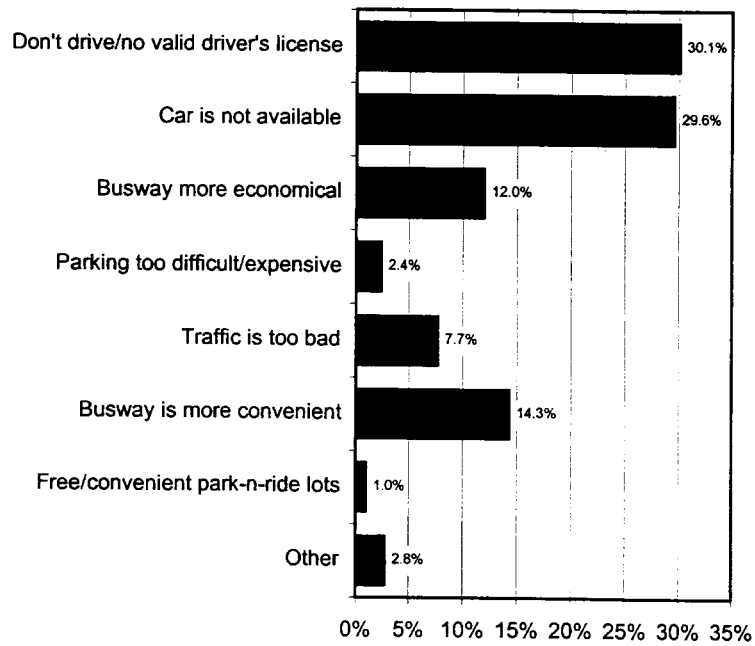
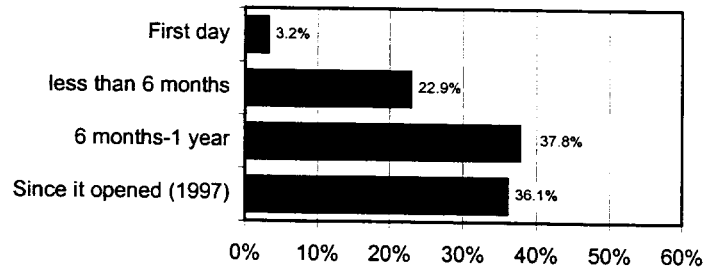


FIGURE 9: Question 13 - How long have you been using the Busway?



RIDER DEMOGRAPHICS

Three questions were asked on the survey instrument to establish a demographic profile of Busway customers. These demographic-related questions included the following:

- Age (Question 14)
- Race/ethnicity (Question 15)
- Total household income for the year 2000 (Question 16)

Typical Rider Profile

Using the demographic findings as well as travel behavior information, a typical rider profile was generated. Comparing these results with data from the 1993 MDT on-board survey (CUTR, May 1994) and the more recent *Miami-Dade Transit 2000 Tracking Study* (Behavioral Science Research, June 2001) shows that the typical Busway rider is very similar to the average Metrobus rider. However, when comparing household income information from the Tracking Study, which analyzed bus-only riders, rail-only riders, and dual-mode riders separately, to the Busway survey results, there is some evidence to suggest that Busway users have, on average, slightly higher incomes than the average bus-only rider. Because the Tracking Study evaluated the incomes of riders using different income categories than the Busway survey, this difference cannot be determined exactly without being able to examine raw data from the Tracking Study.

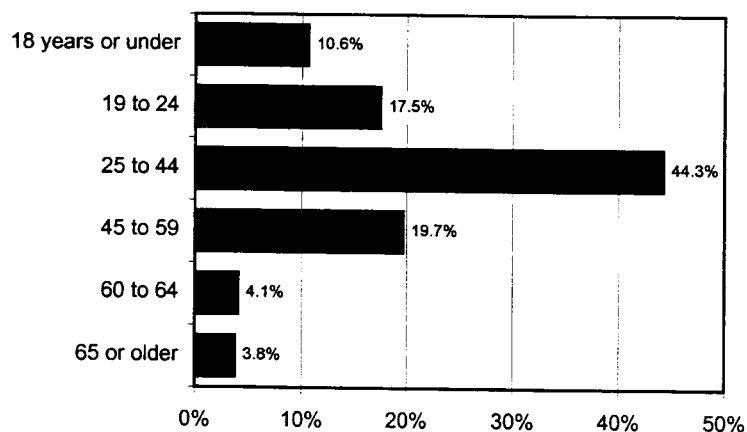
The typical Busway customer may be described as follows:

- Between 25 and 44 years of age;
- Black (non-Hispanic) or Hispanic;
- Earned less than \$25,000 in 2000;
- Rides between five and seven days per week;
- Does not drive or have an available car; and
- Pays the full cash fare.

Age

As evidenced by the results presented in Figure 10, on the following page, the largest share of customers — 44.3 percent — is between 25 and 44 years of age. The second largest group (19.7 percent) includes those between 45 and 59 years of age, while 17.5 percent of customers are between 19 and 24 years of age. Most (about 82 percent) of Busway customers are of working age, between 19 and 59 years. A cross-tabulation was generated to determine if there was any difference in the age profile of those who used Metrobus before the Busway opened and those who did not use transit prior to the opening of the Busway. No significant difference was found, however.

FIGURE 10: Question 14- Your age is...

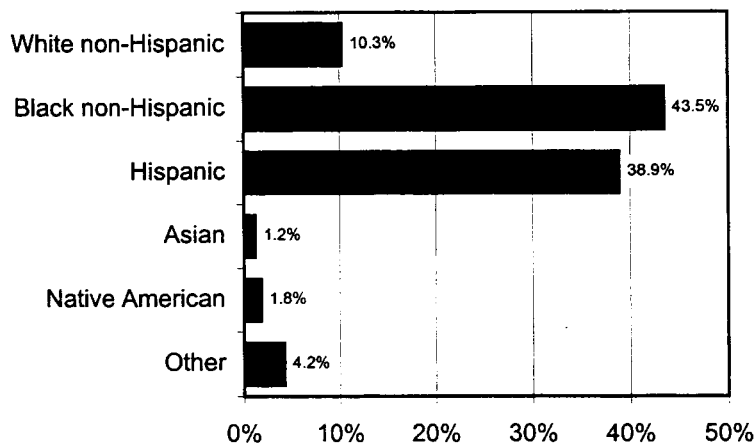


Race/Ethnicity

The majority of survey respondents are “Black (non-Hispanic)” (43.5 percent) or “Hispanic” (38.9 percent), as displayed in Figure 11. White, non-Hispanic customers comprise 10.3 percent of riders, according to these survey results, while a total of 7.2 percent indicated that they were either “Asian,” “Native American,” or “Other.” Interestingly, many respondents wrote in either “Black Hispanic” or “White Hispanic” in the “Other” response to Question 15. This is apparently an important distinction to some survey respondents, and may also reflect the increasing number of individuals throughout the country identifying themselves as mixed race, as evidenced by recent Census 2000 figures.

Again, a cross-tabulation was generated to determine if there was any difference in the race/ethnicity profile of those who used Metrobus before the Busway opened and those who did not use transit prior to the opening of the Busway. Of the survey respondents who indicated that they did not use transit for their trip prior to the opening of the Busway (question #11), 39 percent identified themselves as “Black (non-Hispanic)” and 44 percent identified themselves as “Hispanic.” Of those who, in the same question, indicated that they used another Metrobus route before the Busway opened, 61 percent identified themselves as “Black (non-Hispanic)” while 21 percent identified themselves as “Hispanic” (there were no significant differences among the other race/ethnicity categories).

FIGURE 11: Question 15 - What is your race?



Total Annual Household Income for 2000

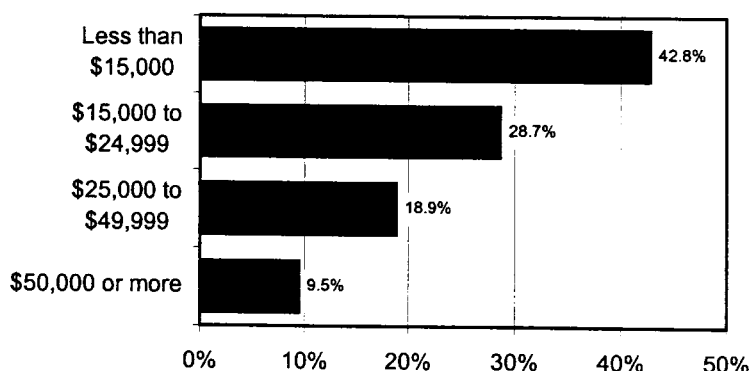
Question 16 asked customers to indicate the range of their total household income for 2000. The results of this question are graphically shown in Figure 12. A majority of Busway customers completing the survey reported household incomes of \$24,999 or less. Specifically, 42.8 percent of those surveyed indicated total household income levels of less than \$15,000 per year, and 28.7 percent had household income levels between \$15,000 and \$24,999 per year. Nearly 19 percent of customers had incomes between \$25,000 and \$49,999, while nearly 10 percent reported household incomes of \$50,000 or more annually.

These findings related to low annual household incomes suggests that the service offered by the Busway is attracting traditional riders of public transit. However, a cross-tabulation of the household incomes of previous transit users (before the Busway opened) and those who previously did not use transit showed evidence that the Busway has attracted some previous non-users of transit with slightly higher average incomes. For example, 40 percent of previous non-users of transit had household incomes below \$15,000 in 2000, while 46 percent of previous Metrobus users have incomes in the same range. Thirty-one percent of previous non-users had incomes of \$25,000 or more, while 22 percent of previous Metrobus users had incomes of \$25,000 or more.

Also, as mentioned previously, a comparison of these results with the Tracking Study also provides evidence that Busway riders have slightly higher incomes than typical Metrobus riders (although this cannot be verified without analysis of raw data from the Tracking Study, due to the use of different income-range categories between the two studies). It would be expected that a higher-quality transit service such as the Busway would attract individuals with slightly higher average incomes than the traditional bus rider. It must also be noted that the best way to make these comparisons would be to compare data from the Metrobus routes that operated in

the Busway corridor along U.S. 1 before the Busway was implemented. This can be accomplished by re-examining route-level raw data from the 1993 MDT on-board survey; however, those data may not be recent enough to produce a valid comparison.

FIGURE 12: Question 16- What was the range of your total household income for 2000?



CUSTOMER SATISFACTION

Question 17 is a multi-part question that asked respondents to rate their perception of 11 different aspects of Busway service, as well as their overall satisfaction with the Busway. It also asked riders to rate their overall satisfaction with MDT as a whole, using a five-point scale (1 = “very poor” and 5 = “very good”). In addition, Question 18 allowed survey respondents to list one improvement that they would make to the Busway, if funding were available. Finally, respondents were allowed to write any other comments or suggestions regarding Busway service.

Satisfaction Ratings

As mentioned previously, Question 17 provided respondents with the opportunity to rate individual levels of satisfaction with various Busway service characteristics. Using the five-point rating system’s numerical scoring values, an average score was calculated for each service characteristic. The resulting mean scores give a better indication of overall customer satisfaction with each of the service characteristics. Because a score of 5 indicates a “very good” rating, the closer to 5 that a characteristic’s mean score is, the higher the degree of customer satisfaction with that characteristic.

Table 13, shown on the following page, presents all of the weighted average customer satisfaction ratings for the service characteristics included in Question 17, rank-ordered from highest to lowest. The responses indicate a general overall satisfaction with Busway service; all mean scores fell between “fair” and “good.”

TABLE 13: Customers' Satisfaction Ratings of Service Characteristics

Service Characteristic	Mean Score (best = 5)
Safety on bus	3.81
Cost of riding Busway	3.76
Availability of information/maps	3.69
Convenience of Busway routes	3.69
Satisfaction with recent changes to Busway (traffic signals)	3.68
Safety at Busway stops	3.65
Travel time on Busway buses	3.63
Availability of seats on the bus	3.60
Hours of Busway service	3.50
Frequency of Busway service	3.25
Dependability of Busway buses	3.18

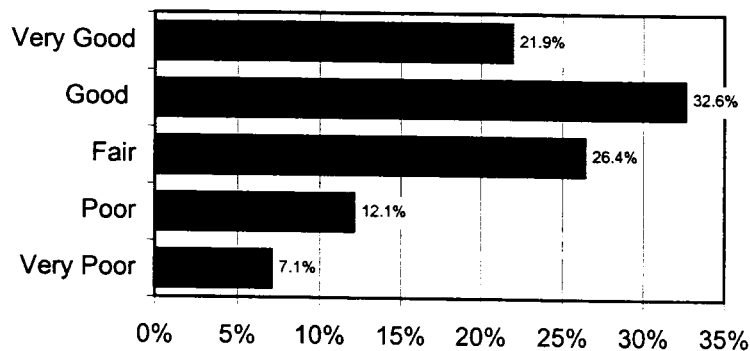
Figures 13 through 23, present the frequency distributions for the 11 Busway service characteristics included in Question 17 of the survey instrument. From the data listed previously in Table 6 and Figures 13 through 23, it is revealed that Busway customers, as represented by the survey respondents, are most satisfied with the level of safety on Busway vehicles (mean score = 3.81) and with the Busway fares, or cost of riding the service (mean score = 3.76). Nearly 27 percent of respondents rated the level of safety on the buses as “very good,” while 40.6 percent rated the safety on the buses as “good.” Concerning the cost of riding the Busway, i.e., the fare, 24.4 percent rated the cost as “very good,” and 38.5 percent rated the cost as “good.”

Other characteristics that rated comparatively well included the availability of system information and maps (mean score = 3.69); the convenience of the Busway routes (mean score = 3.69); and the level of satisfaction with recent changes on the Busway regarding traffic signalization (mean score = 3.68). While the level of safety on the buses was rated the highest among all the other aspects of Busway service, the level of safety at Busway stops was rated somewhat lower, with a mean score of 3.65. Still, a majority (58.5 percent) considers the safety at Busway stops to be “very good” or “good.”

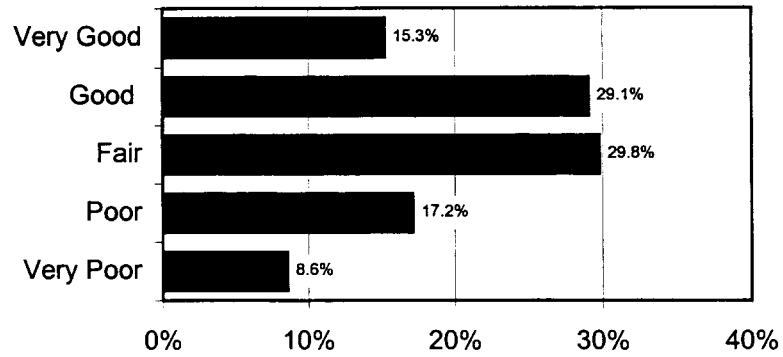
Service aspects that resulted in lower ratings of customer satisfaction included the hours that the Busway operates (mean score = 3.50); frequency of the Busway service (mean score = 3.25); and dependability, or on-time performance, of the Busway buses (mean score = 3.18). The hours of operation on the Busway are a function of MDT's service span as a whole. While a majority (54.5 percent) still rated this characteristic as "very good" or "good," 19.2 percent rated the hours of service as "poor" or "very poor." Similarly, the frequency of service on the Busway is a function of MDT's overall resource availability. Approximately one-fourth (25.8 percent) of the survey respondents indicated that their level of satisfaction with the frequency of service on the Busway is "poor" or "very poor."

The service characteristic that was rated the lowest was the dependability of Busway buses, as measured by on-time performance. Nearly 30 percent of those customers responding to the survey reported a "poor" or "very poor" level of satisfaction with Busway dependability. Despite the low rating for this characteristic, a majority (54 percent) rated the dependability of Busway buses as "good" or "fair."

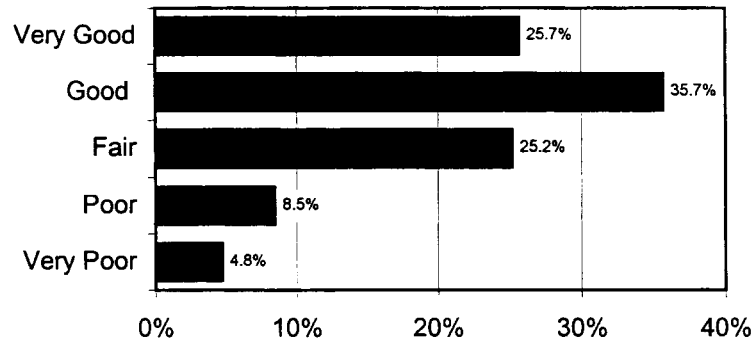
**FIGURE 13: Question 17a - Hours of Service
(mean = 3.50)**



**FIGURE 14: Question 17b - Frequency of Service
(mean = 3.25)**



**FIGURE 15: Question 17c - Convenience of
Routes (mean = 3.69)**



**FIGURE 16: Question 17d - Dependability/On-time
performance (mean = 3.18)**

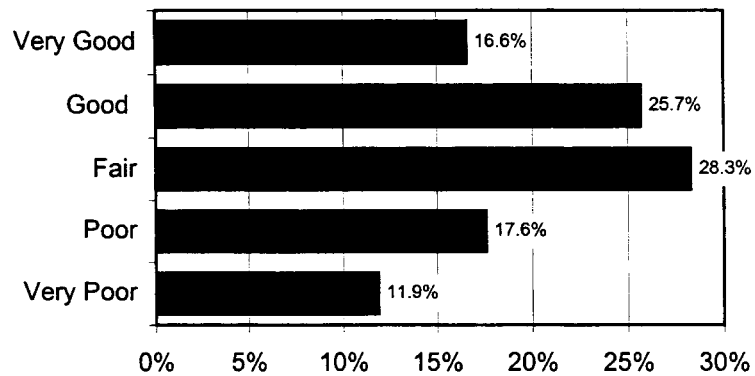


FIGURE 17: Question 17e - Travel time on busway (mean = 3.63)

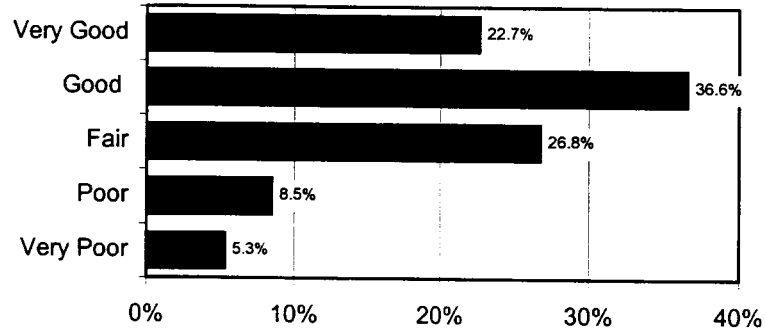


FIGURE 18: Question 17f - Cost of Riding the Busway (mean = 3.76)

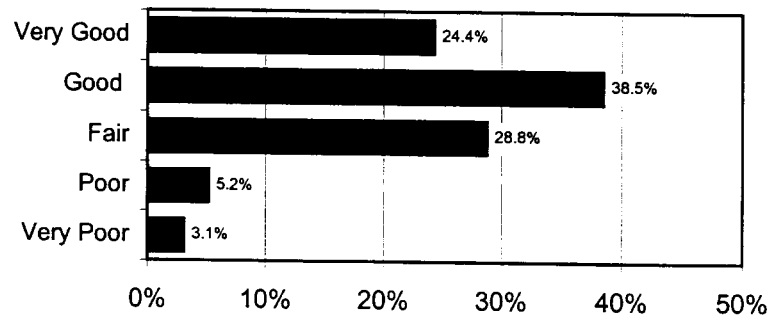


FIGURE 19: Question 17g - Availability of Information/Maps (mean = 3.69)

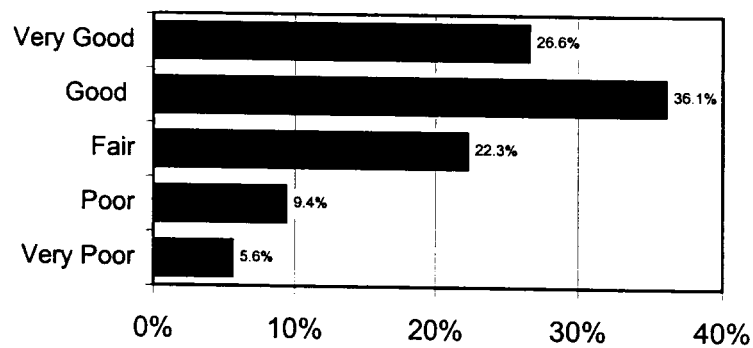


FIGURE 20: Question 17h - Availability of Seats on the Bus (mean = 3.60)

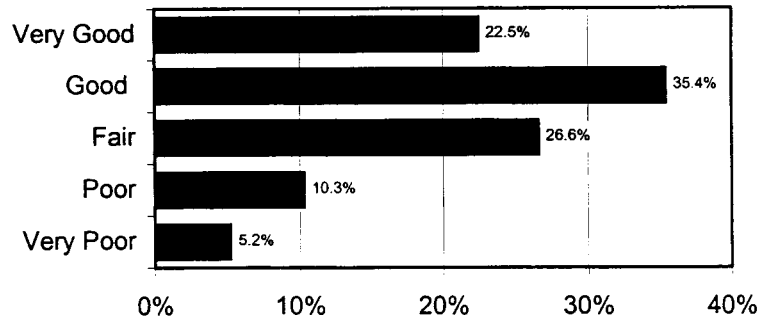


FIGURE 21: Question 17i - Safety on the Bus (mean = 3.81)

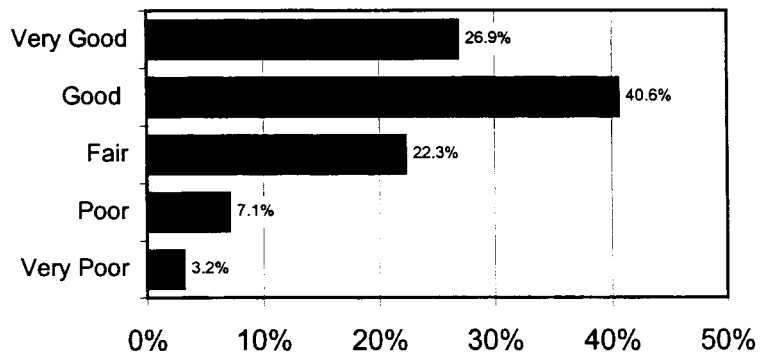


FIGURE 22: Question 17j - Safety at Busway Stops (mean = 3.65)

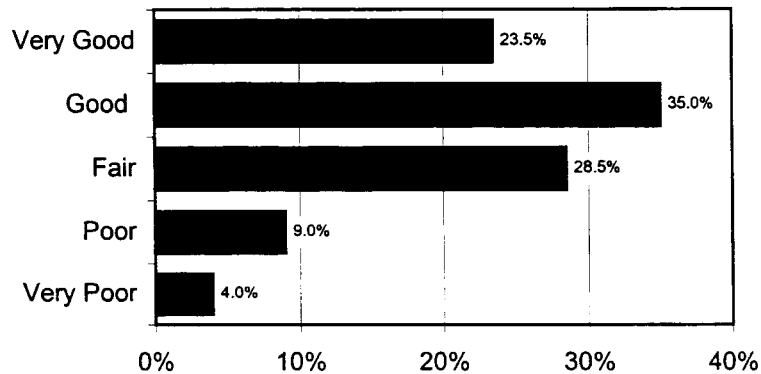
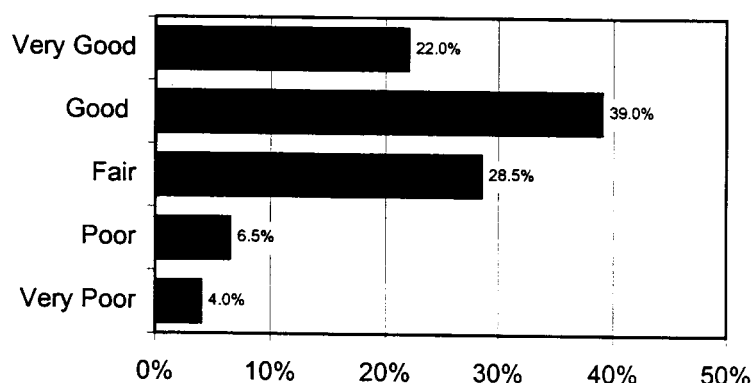


FIGURE 23: Question 17k - Satisfaction with Traffic Signals (mean = 3.68)



Overall Satisfaction with Busway versus Conventional MDT Local Service

Questions 17l and 17m asked respondents to rate their overall satisfaction with Busway service compared to their overall satisfaction with MDT services as a whole. As shown in Table 14, nearly 64 percent of the survey respondents rated their overall satisfaction with the Busway service as “very good” or “good” (mean score = 3.75). Figure 24 shows this comparison graphically. This finding shows that respondents are more satisfied with Busway service as compared to MDT services as a whole because the mean score for the overall satisfaction with MDT is somewhat lower at 3.61. This difference in means for the two questions was found to be statistically significant at the $p = 0.05$ level using the statistical procedure known as a T-test of Independent Samples ($t=29.688^*$). This statistical difference means that customers are more satisfied with the Busway’s special service attributes such as its perceived faster service¹ and limited stopping than conventional MDT Metrobus routes.

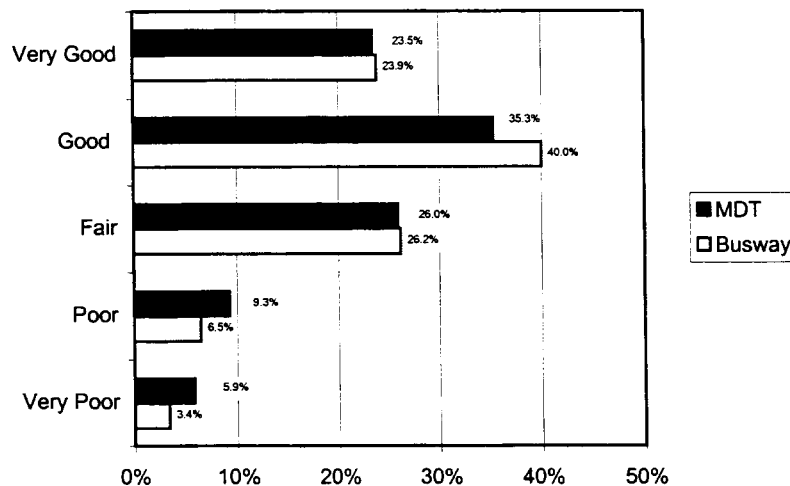
TABLE 14: Customers' Satisfaction Ratings of Busway and MDT

Service Characteristic	Mean Score (best = 5)
Overall satisfaction with the Busway	3.75
Overall satisfaction with MDT	3.61

¹ Currently the scheduled time saving is minimal because buses operate at-grade and are interrupted at intersections located at intervals of about one-half mile. Therefore, Busway service is not much faster than when the conventional MDT local buses operated in the South Miami corridor. MDT calculated the scheduled timesaving to be less than 10 percent. However, MDT believes that customers perceive a reduction in overall travel time.

In addition, a cross-tabulation was performed using the responses to Question 11 in order to isolate those respondents who indicated that they rode an MDT local bus prior to the implementation of the Busway and those respondents who used a mode other than an MDT local bus, such as an automobile, bicycle, or jitney, for their travels prior to shifting trips to the Busway. This information was then used to perform two cross-tabulations using the information from Question 11 with Question 17e (travel time on Busway buses) to determine the difference in mean scores of the two groups. The cross-tabulation revealed that prior MDT riders rated the travel time satisfaction on the Busway higher (mean score = 3.76) than those that had no prior experience with MDT local bus service (mean score = 3.60). This difference in the two mean scores was found to be statistically significant at the $p=0.05$ level using the statistical procedure known as a T-test of Independent Samples ($t=-6.67^*$). This is an important finding because it is assumed that persons using MDT local bus service prior to the implementation of the Busway would use their combined experience riding MDT local bus service as a benchmark or point of reference when evaluating the Busway service. In other words, previous customers of MDT local bus services view the Busway as providing a significant increase in service speed. These positive findings for the Busway service may also have a positive spillover effect on how customers perceive conventional MDT Metrobus routes.

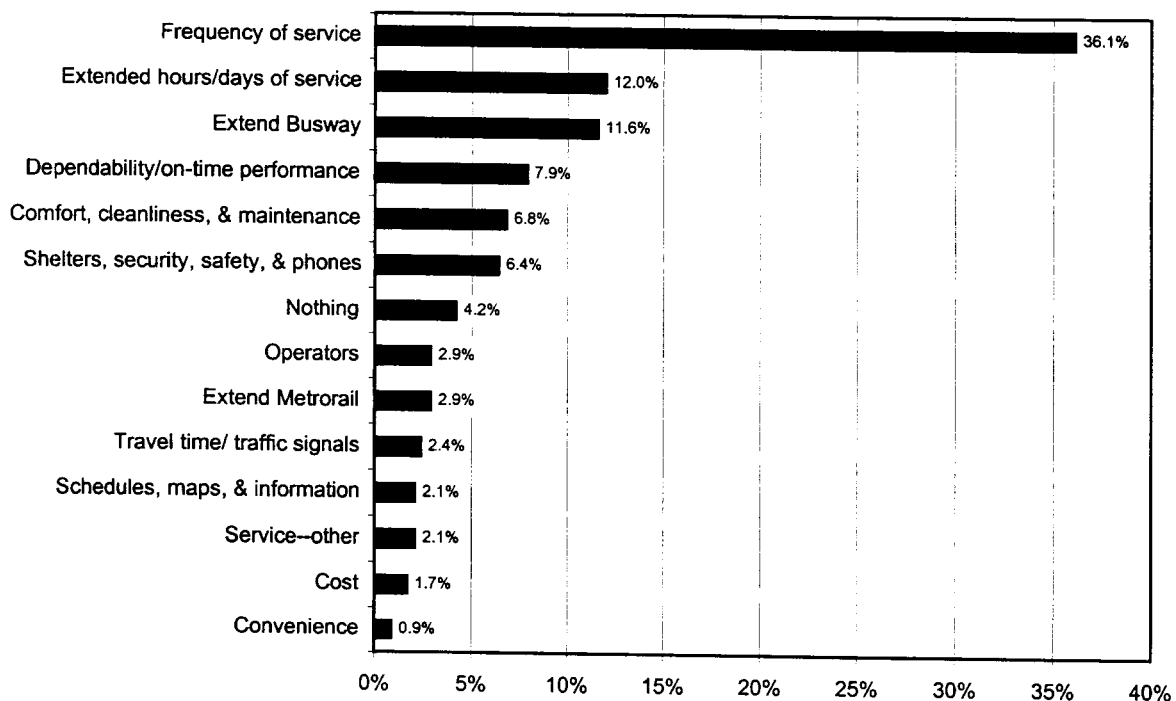
**FIGURE 24: Questions 17l, 17m - Overall
Satisfaction with the Busway versus Overall
Satisfaction with MDT (Busway mean = 3.75;
MDT mean = 3.61)**



Priority Improvements

As stated previously, Question 18 allowed customers to identify a single priority improvement to the Busway system. The responses were categorized so that these results could be more easily summarized. The results of this question reflect those characteristics that customers were least satisfied with in Question 17, which included the frequency of service, hours of service, and dependability of service. The top four highest-prioritized improvements as revealed from Question 18 were: increased frequency of Busway service; extending the Busway farther south; extended hours of service (and days of service, for particular routes); and improved dependability of Busway service. The frequency distribution of the responses for Question 18 is exhibited in Figure 25. The results in Figure 25 show that 36.1 percent— more than one-third — of those responding to this question indicated that the most important improvement would be to increase the frequency of the service. Twelve percent would extend Busway hours of service, and nearly 12 percent would extend the Busway corridor. (Because the survey did not inquire about this information, it is not clear how many customers are aware of MDT's plans for extending the Busway farther south).

**FIGURE 25: Question 18 - If funding became available, what is the ONE improvement to the Busway that you would make?
(priority improvements by category)**



Customer Satisfaction by Busway Route

The survey results based on the customer satisfaction items in Question 17 were also analyzed by Busway Route. Significant findings are highlighted in this section and indicate that the most satisfied Busway customers ride the Saga Bay MAX (Route 287). While Table 2 in this report shows that this minibus route has the lowest ridership of the Busway routes, the table also reveals that this route had the second-highest response rate of all the routes, second to the Coral Reef MAX (Route 252). At least 80 percent of Saga Bay MAX riders consistently rated the items in Question 17 (a. through k.) as “good” or “very good,” which is a significantly higher percentage for these ratings (“good” and “very good”) than the other routes. The only exception is for dependability, which had 75 percent of the Saga Bay MAX riders rating this characteristic as “good” or “very good.”

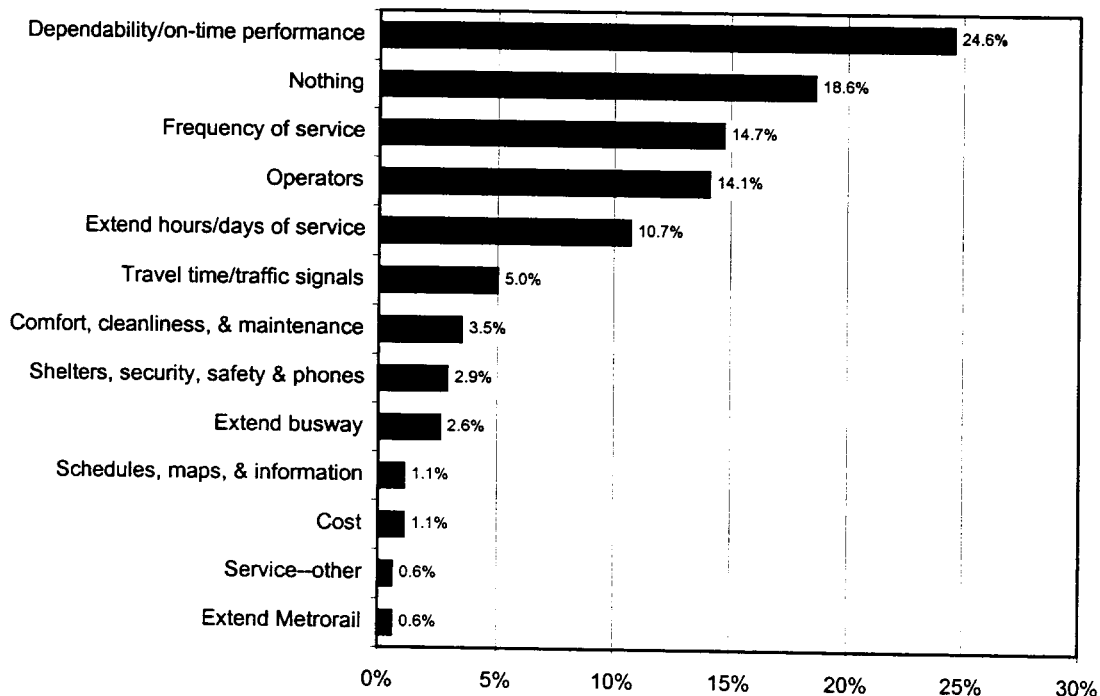
Route 52 and the Coral Reef MAX (Route 252) had higher percentages of respondents rating them as “poor” or “very poor” with regard to hours of service and frequency of service. The Busway Local (Routes 31/231) was also rated lower in terms of frequency of service.

The seat availability item was examined to see whether customers riding the minibus routes (Coral Reef MAX, Saga Bay MAX, and some Busway Local runs) were less satisfied with the availability of seats on the smaller vehicles. However, it was found that satisfaction with seat availability was rated about the same for the minibus routes as for the routes operated with larger vehicles, with slightly less satisfied responses for the Busway Local and the Coral Reef MAX. Specifically, 19 percent of Route 231 riders, 22 percent of Coral Reef MAX riders, and only 4 percent of Saga Bay MAX riders rated seat availability as “poor” or “very poor.” For the routes with larger buses, 11 percent of Route 1 riders, 18 percent of Route 31 riders, 17 percent of Route 38 (Busway MAX) riders, and 11 percent of Route 52 riders rated seat availability as “poor” or “very poor.”

General Comments

The last section of the survey instrument contained space for customers to write additional comments or suggestions regarding Busway service (see Figure 26). Most of the comments echoed those found in Question 18 concerning improvements to the system. Comments regarding “dependability of service” (i.e., on-time performance) represented approximately one-fourth of all general comments. Though “dependability of service” ranked as the fourth highest priority for improvement in Question 18 (response rate = 55.3 percent), it was the most common of the “Comments and Suggestions” (response rate = 40.3 percent) for those respondents who chose to provide more information on the survey.

**FIGURE 26: Comments and Suggestions About Busway Service
(by category)**



CONCLUSIONS

In keeping with the FTA's evaluation guidelines for its BRT Demonstration Program, CUTR worked jointly with MDT to conduct an on-board passenger survey of South Miami-Dade Busway customers in March 2001. The on-board survey was conducted to assess Busway customer perceptions, behavior, and profiles. The Busway on-board survey asked customers to evaluate various elements of service as well as overall satisfaction, with the ultimate purpose of measuring the impacts of the Busway on customer perceptions compared to standard local bus service after the introduction of the Busway. Specific questions focused on customer behavior, including trip origins and destinations and frequency of Busway use. Finally, demographic questions provided a basis to assess changes in the demographic profile of Busway and local customers.

Significant survey findings show that almost one-half of the Busway customers were not previous transit users. Most customers made the trip by driving alone or carpooling, or using a jitney or a taxi. These findings suggest that the available Busway services have contributed to increased transit usage in the region. Almost one-third of the customers have used Busway services since its' inception. However, more than one-fourth are new users (less than 6 months, including first day riders) suggesting that the Busway continues to attract new customers.

Results also suggest that the Busway attracts customers with slightly higher incomes compared to traditional MDT users.

Overall, the results from the on-board survey clearly show that Busway customers are satisfied with the service offered by the Busway. In fact, customers who responded to the survey indicated that they are more satisfied with the Busway service compared to that offered by conventional MDT local bus service. Customers are also more satisfied with the increased service speeds offered by the Busway. As for Busway service characteristics, customers are most satisfied with the level of safety and the cost to use the service. If funding were available, one-third of the customers would increase the frequency of the service.

Throughout the public transit industry, even slight changes in customer satisfaction are rare, particularly when comparisons are made across bus-based modes. This finding suggests that the Busway service offered by the MDT has elevated the overall quality of the various public transit services offered by the MDT from the customers' perspective. This finding further suggests that MDT has been successful in implementing and operating the Busway service since the inception of the service in February 1997.

APPENDIX A
BUSWAY SURVEY INSTRUMENT

SOUTH-DADE BUSWAY ON-BOARD SURVEY (la version en Español al dorso)

DEAR VALUED TRANSIT RIDER: MDTA would like information about your trip and your opinion to help improve its transit service. PLEASE take a few minutes to complete the following survey. Please do not put your name or other identifying marks on the survey. Please check (✓) the correct item, write out, or circle your answers. Even if you do not complete the survey, please return it to the bus driver or surveyor as you exit the bus. **THANK YOU FOR YOUR COOPERATION!**

- Where did you come from before you got on the bus for this trip?
 1. Home 4. School (K-12) 7. Shopping/Errands
 2. Work 5. College/Technical School 8. Other _____ (specify)
 3. Medical 6. Visiting/Recreation
- What is the address or nearest intersection of where you started this trip? _____
- Where did you get on this bus? _____
 (Bus stop or nearest street intersection/place to the bus stop)
- How did you get to the bus stop for this particular bus trip? (please ✓ only ONE)
 1. Walked 5. Transfer from MDTA bus route # or name _____
 2. Drove (park-and-ride) 6. Transfer from Metrorail _____
 3. Taxi 7. Was dropped off _____
 4. Bicycle 8. Other _____ (specify)
- Where will you get off this bus? _____
 (Bus stop or nearest street intersection/place to the bus stop)
- How will you get to your final destination? (please ✓ only ONE)
 1. Walk 5. Transfer to MDTA bus route # or name _____
 2. Drive 6. Transfer to Metrorail _____
 3. Taxi 7. Will be picked up _____
 4. Bicycle 8. Other _____ (specify)
- Where are you going on THIS trip? (please ✓ only your FINAL destination)
 1. Home 5. School (K-12) 7. Shopping/Errands _____ (specify)
 2. Work 6. College/Technical School 8. Other _____ (specify)
 3. Medical 9. Visiting/Recreation
- What is the address or nearest intersection of your final destination? _____
- How often do you use a Busway route? (please ✓ only ONE)
 1. Every day 3. 3 or 4 days per week 5. Once per month or less
 2. 5 or 6 days per week 4. 1 or 2 days per week 6. Once every _____ weeks
- What fare did you pay in order to get on this particular bus?
 1. Full Fare (\$1.25) 5. Metropass (full fare) 8. Transfer from MDTA Bus
 2. Reduced Fare (\$0.60) 6. Metropass (reduced fare) 9. Transfer from Metrorail
 3. Express Bus Full Fare (\$1.50) 7. Metropass (college student)
 4. Express Bus Reduced (\$0.75) 8. Golden Passport
- Before the Busway opened, how did you make this trip?
 1. Drove 5. Walked 8. Other _____ (specify)
 2. Rode with someone 6. Taxi
 3. Bicycle 7. Didn't make trip
 4. Jitney 9. Rode MDTA bus route # _____
- What is the most important reason why you currently use a Busway route? (please ✓ only ONE)
 1. I don't drive/no valid license 5. Traffic is too bad
 2. Car is not available 6. Busway is more convenient
 3. Busway is more economical 7. Free/convenient park-and-ride lots
 4. Parking at destination is too difficult/expensive 8. Other _____ (specify)

- How long have you been using the Busway?
 1. This is the first day 3. 6 months to 3 years
 2. Less than 6 months 4. since it opened (1997)
- Your age is...
 1. 18 years or under 3. 25 to 44 5. 60 to 64
 2. 19 to 24 4. 45 to 59 6. 65 or older
- What is your race? (please ✓ only ONE)
 1. White Non-Hispanic 3. Hispanic 5. Native American
 2. Black Non-Hispanic 4. Asian 6. Other _____ (specify)
- What was the range of your total household income for 2000?
 1. Less than \$15,000 3. \$15,000 to \$24,999 5. \$25,000 to \$49,999 7. \$50,000 or more
- In general, how would you rate each of the following aspects of Busway service?
 Please Circle the number that best reflects your opinion

	Very Good	Good	Fair	Poor	Very Poor
a. Hours of Busway service	5	4	3	2	1
b. Frequency of Busway service (how often buses run)	5	4	3	2	1
c. Convenience of Busway routes (where buses go)	5	4	3	2	1
d. Dependability of Busway buses (on time)	5	4	3	2	1
e. Travel time on Busway buses	5	4	3	2	1
f. Cost of riding the bus	5	4	3	2	1
g. Availability of bus route information/maps	5	4	3	2	1
h. Availability of seats on the bus	5	4	3	2	1
i. Safety on bus	5	4	3	2	1
j. Safety at Busway stops	5	4	3	2	1
k. Your satisfaction with recent changes to the Busway (traffic signals)	5	4	3	2	1
l. Your overall satisfaction with the Busway	5	4	3	2	1
m. Your overall satisfaction with MDTA	5	4	3	2	1

18. If funding became available, what is the ONE improvement to the Busway that you would make?

Comments and Suggestions about Busway service:

THANK YOU FOR COMPLETING THE SURVEY!!!
 PLEASE RETURN THE COMPLETED SURVEY TO THE BUS
 DRIVER, SURVEYOR, OR SURVEY RETURN BOX.
 If you have any additional comments or questions, please call 305-654-6586.

SOUTH-DADE BUSWAY ON-BOARD SURVEY (English version on other side)

ESTIMADO USUARIO DEL SISTEMA DE AUTOBUSES: A MDTA le gustaría obtener información de su viaje y su opinión para poder mejorar el sistema de autobuses. POR FAVOR denos un poco de su tiempo y llene este cuestionario. Por favor no ponga su nombre ni otro tipo de identificación en el cuestionario. Por favor marque (✓), escriba o circule la respuesta apropiada. Aunque no termine el cuestionario, por favor entréguelo al conductor cuando salga del autobús. GRACIAS POR SU COOPERACIÓN

- ¿De dónde venía antes de montarse en el autobús para este viaje?
 1 Casa 4 Escuela (K-12) 7 Compra / Diligencias
 2 Trabajo 5 Universidad / Escuela Técnica 8 Otro _____ (especifique)
- ¿Cuál es la dirección o intersección mas cercana de donde empezó este viaje? _____
- ¿Dónde subió al autobús? _____ & _____
 (parada de autobús o intersección de calle / local mas cerca)
- ¿Cómo llegó a la parada de autobús para este viaje? (por favor ✓ solo UNA respuesta)
 1 Caminando 5 Una transferencia de MDTA (autobús ruta # o nombre) _____
 2 Conduciendo (park-and-ride) 6 Una transferencia de Metrorail
 3 Taxi 7 Me llevaron a la parada
 4 Por Bicicleta 8 Otro _____ (especifique)
- ¿Dónde se va a bajar de este autobús? _____ & _____
 (parada de autobús o intersección de calle / local mas cerca)
- ¿Cómo va a llegar a su destino final? (por favor ✓ solo UNA respuesta)
 1 Caminando 5 Una transferencia de MDTA (autobús ruta # o nombre) _____
 2 Conduciendo 6 Una transferencia de Metrorail
 3 Taxi 7 Me van a recoger
 4 Por Bicicleta 8 Otro _____ (especifique)
- ¿Motivo de este viaje? (por favor ✓ solo UNA respuesta)
 1 Casa 4 Escuela (K-12) 7 Compra / Diligencias
 2 Trabajo 5 Universidad / Escuela Técnica 8 Otro _____ (especifique)
 3 Medico 6 Visita / Recreación
- ¿Cuál es la dirección o intersección mas cerca a su destino final? _____
- ¿Cuántas veces usted a usado una ruta de Busway? (por favor ✓ solo UNA respuesta)
 1 Todos los días 3 3 o 4 días por la semana 5 Una vez cada mes o menos
 2 5 o 6 días por la semana 4 1 o 2 días por la semana 6 Una vez cada _____ semanas
- ¿Cuánto pagaste por este viaje?
 1 Precio normal (\$1.25) 6 Metropass (Precio reducido)
 2 Precio reducido (\$0.60) 7 Metropass (Precio de estudiante)
 3 Precio normal por el autobús expreso (\$1.50) 8 Pasaporte de Oro
 4 Precio reducido por el autobús expreso (\$0.75) 9 Una transferencia de MDTA autobús
 5 Metropass (Precio normal) 10 Una transferencia de Metrorail
- ¿Antes de que existiera el Busway, cómo hacía este viaje?
 1 Conduciendo 5 Caminando 9 Otro _____ (especifique)
 2 Alguien le llevó 6 Taxi
 3 Por Bicicleta 7 No hizo este viaje
 4 Pagando a otra persona por el viaje 8 Usando MDTA autobús ruta # _____
- ¿Cuál es la razón más importante para usar una ruta de Busway? (por favor ✓ solo UNA respuesta)
 1 No conduzco / no tengo licencia de conducir 5 Hay demasiado tráfico
 2 Automóvil no está disponible 6 Autobús es más conveniente
 3 Autobús es más económico 7 Gratis y conveniente "park-and-ride"
 4 Parqueo demasiado difícil/costoso en el destino final 8 Otro _____ (especifique)

- ¿Por cuanto tiempo usted ha usado el Busway?
 1 Este es el primer día 3 6 meses a 3 años
 2 Menos de 6 meses 4 Desde que empezó (1997)
 - Su edad es...
 1 18 años o menos 3 25 a 44 5 60 a 64
 2 19 a 24 4 45 a 59 6 65 o más
 - ¿Cuál es su raza? (por favor ✓ solo UNA respuesta)
 1 Caucásico No-Hispano 3 Hispano 5 Indio Norte-Americano
 2 Africano-Americano No-Hispano 4 Asiático 6 Otro _____ (especifique)
 - ¿Cuál fue el ingreso total de su casa durante el año 2000?
 1 Menos de \$15,000 2 \$15,000 a \$24,999 3 \$25,000 a \$49,999 4 \$50,000 o más
 - ¿En general, como usted evaluaría los siguientes aspectos del servicio de Busway?
 Por favor circule el número que mejor represente su opinión.
- | | Muy Bien | Bueno | Neutral | Malo | Muy Malo |
|--|----------|-------|---------|------|----------|
| a. Horas de servicio de Busway | 5 | 4 | 3 | 2 | 1 |
| b. Frecuencia de servicio de Busway (cuan a menudo corren los autobuses) | 5 | 4 | 3 | 2 | 1 |
| c. Conveniencia de las rutas de Busway (donde van los autobuses) | 5 | 4 | 3 | 2 | 1 |
| d. Contabilidad del Busway (a tiempo) | 5 | 4 | 3 | 2 | 1 |
| e. Tiempo empleado en autobuses de Busway | 5 | 4 | 3 | 2 | 1 |
| f. Costo de viajar en autobuses | 5 | 4 | 3 | 2 | 1 |
| g. Información de las rutas de autobuses | 5 | 4 | 3 | 2 | 1 |
| h. Asientos disponibles en el autobús | 5 | 4 | 3 | 2 | 1 |
| i. Seguridad en autobuses | 5 | 4 | 3 | 2 | 1 |
| j. Seguridad en paradas de Busway | 5 | 4 | 3 | 2 | 1 |
| k. Su satisfacción con cambios recientes al Busway (señales de tráfico) | 5 | 4 | 3 | 2 | 1 |
| l. Su satisfacción en general con el Busway | 5 | 4 | 3 | 2 | 1 |
| m. Su satisfacción en general con MDTA | 5 | 4 | 3 | 2 | 1 |

18. ¿Si los fondos estuvieran disponibles, cual seria UNA mejora que usted le haría al servicio de Busway?

Comentarios y sujeciones para el Busway:

GRACIAS POR TERMINAR EL ESTUDIO!!!

POR FAVOR ENTREGUE EL ESTUDIO COMPLETADO A EL CONDUCTOR DEL AUTOBÚS, EL INVESTIGADOR O LA CAJA DE ESTUDIOS.

Si desea comentarios o preguntas adicionales, por favor llamen a 305-654-6586.